

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES

**Summary of RIDEM  
Onsite Wastewater Treatment System  
(OWTS) Rule Changes**

Effective Date: January 1, 2008

The Rhode Island Department of Environmental Management's Office of Water Resources has made significant changes to the Individual Sewage Disposal System Regulations. These changes update technical standards for the siting and design of septic systems, improve treatment for environmental protection and public health, increase protection of water resources, streamline the permitting process, and reformat the rules to follow the sequence of actions taken in permitting a septic system in RI. Under the new Rules, a septic system will be referred to as an onsite wastewater treatment system (OWTS) rather than an individual sewage disposal system.

This document attempts to briefly summarize the most significant of the proposed changes. Copies of the new Rules are available on the DEM website at <http://www.dem.ri.gov> and from the Office of Water Resources at 235 Promenade Street, Providence, RI 02908 or by calling 401-222-6820.

**Rule 8 Prohibitions**

- Deep concrete chambers (galleys) are prohibited for applications for new building construction and alterations. Galleys will only be allowed on repairs if the designer demonstrates that no alternative type of leachfield can be utilized.
- In accordance with a US EPA requirement, the use of large capacity cesspools (cesspool that serves any non-residential facility that has the capacity to serve more than 20 people per day or serves a multi-family residence or apartment building) is prohibited and any such use must cease and the cesspool properly removed or abandoned.

**Rules 9 – 13 Licenses**

- Licenses are valid for a period of 3 years.
- Continuing education requirements for Class I, II, III and IV license renewals have been modified. Events eligible for professional development continuing education will be rated by DEM for their value and applicability to each design class, and the events will be assigned continuing education units (CEUs). All designer license classes will be required to obtain a minimum of 4 CEUs per year since the applicant's license was last issued.
- A rule on installer's licenses has been included. The requirements in this Rule incorporate provisions from RI General Laws Chapter 5-56 ("Installers of Individual Sewage Disposal Systems").

**Rule 15 Soil Evaluation**

- "Site evaluation" has been replaced with "soil evaluation" throughout the Rules. What was the site evaluation is now addressed by the soil evaluation in Rule 15 and additional site testing in Rule 16. Information that had been required by the site evaluation that is not required by Rule 15 or 16 is required as part of the plan submission requirements in Rule 18.

- The table used to assign a soil category for each soil horizon has been modified significantly to more accurately reflect soil conditions encountered in RI that effect septic system function. The soil category table still consists of 10 categories, but changes were made to the designated textures and structures. In addition, "excavation difficulty" has been added to the table to provide an additional tool to assist in determining soil consistence.

## **Rule 17 OWTS Applications**

**Local Ordinances** – Municipalities may petition the Department to require municipal review for compliance with local ordinances prior to DEM initiating its review. The petition must state the local standard(s) that is more stringent than the standard(s) in these Rules and the municipal official responsible for local review. In municipalities where the petition has been approved, applicants must submit documentation to DEM on forms approved by DEM that the municipality has certified that the application is in compliance with all local ordinances.

**OWTS Suitability Determination** – An OWTS Suitability Determination is a determination as to whether or not an existing OWTS is suitable for a proposed building construction, renovation or change of use so as to protect public health and the environment. An OWTS Suitability Determination Application to the Department is required only when explicitly indicated in the Rules or requested by the Department or a local building official. However, an OWTS Suitability Determination Application may be submitted to the Department in order to determine the applicability of the Rules. OWTS suitability is determined by the following:

*For OWTSs installed with state approval on or after April 9, 1968:*

- The OWTS is suitable and no application to the Department is necessary for any building construction, renovation or change in use, that does not result in an increase in the number of bedrooms in a residential structure beyond the number in the original state approval; or does not result in an increase in the wastewater flow greater than the OWTS approved design flow. However, the OWTS is unsuitable and an OWTS Application for Alteration to a Structure must be submitted when any of the following occur, even if there is no increase in flow:
  - Whenever the proposed construction or renovation changes the structure's footprint such that the OWTS is not in compliance with the Rules;
  - If the proposed change of use is from a facility that does not prepare food to a restaurant or other facility that prepares food; or
  - For a change in use, if the OWTS for the new use meets the definition of a large OWTS .
- The OWTS is unsuitable for any building construction, renovation or change of use, that results in an increase in the number of bedrooms in a residential structure beyond the number in the original state approval; or results in an increase in the wastewater flow greater than the OWTS approved design flow. An OWTS Application for New Building Construction or an OWTS Application for Alteration to a Structure shall be required before the proposed building construction, renovation or change of use may be allowed.

*For OWTSs installed without state approval, OWTSs installed prior to April 9, 1968 and cesspools:* Whenever a person proposes any building construction, renovation, or change of use (as defined in the Rules) of a structure served by such an OWTS, the OWTS is unsuitable and shall be upgraded to the standards in the Rules. An OWTS Application for New Building Construction or an OWTS Application for Alteration to a Structure shall be required in accordance with Rule 17.4 or Rule 17.5, respectively, whichever is applicable. For the purposes of this Rule, the term "building construction or renovation," shall be defined as any addition, replacement, demolition and reconstruction, or modification of a structure on the subject property which:

- Results in an increase in sewage flow into the system.
- Involves demolition or replastering or replacement of interior wallboard, interior walls, ceilings, flooring, windows, plumbing fixtures, electrical wiring or kitchen cabinetry over 50% or more of the living area of the existing structure.
- Involves adding an additional floor level or portion of floor level of living space to the existing structure.
- Increases the footprint of the living space of the structure.

Applicants can be granted an exemption from the requirement above to upgrade their system provided that a licensed Class II or III designer certifies to the local building official on an OWTS Suitability Determination Form that **all** of the following conditions are met (“imminent sewer exemption”):

- The OWTS is not failed;
- For a residence, any increase in wastewater flow to the OWTS is limited to one bedroom. For all other uses, no increase in wastewater flow to the OWTS is allowed; and
- The municipality holds a form of financial surety for expansion of sewers to the area of the structure served by the OWTS within 5 years of the date of submission of the System Suitability Determination Form.

The owner must also certify, on the same OWTS Suitability Determination Form, that the structure will be connected within 60 days of the sewer becoming available.

**Alterations** – A soil evaluation is now required for all alteration applications. Soil evaluations for residential alteration applications where the design flow is less than or equal to 690 gallons per day (gpd) (6 bedroom residence) are not required to be witnessed by DEM.

### **Repairs**

- Definition of “Failure” has been expanded to include specific performance criteria.
- Cesspool replacement is considered a repair, provided there will be no increase in flow to the OWTS.
- Under the limited circumstances below, an application for repair will not be necessary prior to repairing the system. All work must be in compliance with the Rules.
  - Verbal authorization will be required when replacing a faulty septic tank. A complete application must be submitted to the Department by the end of the next business day.
  - The following will require no notification to the Department:
    - o Replacing a crushed or broken sewer pipe between the building and the septic tank.
    - o Installation of access openings to finished grade or upgrading of existing, at-grade tank covers
    - o Retrofitting for a septic tank effluent screen will require no notification to the Department, but the effluent screen must be listed on the Approved Alternative and Experimental Technologies List.
    - o In-kind replacement of failed electrical or mechanical devices.

### **Rule 19 Applications Involving the RI DEM Wetlands Program**

- For construction projects that may affect freshwater wetlands, applications may be submitted to the DEM Wetlands Program and the OWTS Program either sequentially or simultaneously. However, under a simultaneous submission, although both applications will be reviewed at the same time, the OWTS Application will not be given final approval without a Wetlands determination or permit, as appropriate.

### **Rule 20 Subdivisions**

- Subdivisions of 5 lots or less that have frontage on an existing road have the option to apply for a Certification of Subdivision Site Suitability or submit applications for the individual lots.
- One soil evaluation must be conducted for each lot. The soil evaluations must be approved by DEM prior to application for Certification of Subdivision Site Suitability.
- The Certification of Subdivision Site Suitability must be prepared by a licensed Class II or Class III Designer, as appropriate.

## **Rule 21 Wastewater Flows**

- Changes were made to the table of wastewater flows for various types of establishments and to include additional establishments.
- Guidelines are established for determining the number of bedrooms in single family residential dwellings in recognition of the fact that houses contain rooms that meet the definition of a bedroom, but which are not intended to be or likely to ever be used as bedrooms.
- The design flow for residential use has decreased from 150 to 115 gallons per day (gpd) per bedroom. The minimum design flow is 345 gpd (3 bedrooms). Because DEM believes that the size of existing leachfields for residential use is appropriate even given current trends in water usage, DEM intends to maintain the same leachfield size in the new Rules as in the previous Rules for residential OWTSS. Since the design flow is reduced by approximately 23%, the loading rates in Rule 32 have been reduced by approximately 23%. Since the same leachfield loading rates used for residential OWTSS are used for all other OWTSS, uses in the proposed regulations that have no change in design flow or an increase in design flow will have a larger leachfield under the proposed regulations.
- A minimum design flow of 500 gpd for restaurants has been established. Design flow for full service restaurants has decreased from 70 gpd per seat to 40 gpd, and flow for single service restaurants has decreased from 35 gpd per seat to 25 gpd with 500 gpd added if the establishment has a drive-up window.

## **Rule 22 Minimum Setback Distances**

- The Rules establish 2 setback distances from natural resource features depending on whether the OWTSS design flow is greater than or less than 5,000 gpd.
- In most cases the setback for systems less than 5000 gpd is equal to or greater than the setback in the previous Rules. The exceptions are as follows:
  - The setback from a drinking water reservoir tributary, tributary wetland, and storm drain that discharges to the reservoir has been decreased from 200 feet to 100 feet.
  - The setback from a watercourse in a drinking water supply watershed that is not a tributary of the reservoir (not connected) has been decreased from 100 feet to 50 feet
  - The setback from a watercourse in the Salt Pond or Narrow River watershed that is not a tributary (not connected) has been decreased from 100 feet to 50 feet.
- The setback for systems greater than or equal to 5000 gpd is 2 times that for systems less than 5000 gpd.
- The setback distance from private drinking water wells ranges from 100 feet to 400 feet depending on the design flow of the OWTSS.
- The setback distance from private drinking water wells may be reduced to a minimum of 80 feet for residential systems with a design flow less than 500 gpd on lots 10,000 square feet or larger with the use of a Category 1 nitrogen reducing technology and a pressurized shallow narrow drainfield, and where the separation distance to groundwater is 3 feet or greater.
- Private wells for irrigation or other non-potable water uses are no longer classified as private drinking water wells. The setback from these wells serving non-potable water uses is 50 feet.
- Additional changes to the setbacks to note are:
  - The distance from a leachfield to a downgradient or side gradient subsurface drain has been increased from 25 feet to 50 feet.
  - Setbacks have been established for swimming pools.

## **Rule 26 Septic Tanks**

- All septic tanks must have two compartments with the first compartment having a liquid volume that is two-thirds the required volume of the entire tank.
- Except for those requirements in the DEM regulations that are not consistent:
  - Precast reinforced concrete tanks must conform to the ASTM standards; and
  - Fiberglass and polyethylene tanks must conform to the International Association of Plumbing and Mechanical Officials “Material and Property Standard for Prefabricated Septic Tanks IAPMO PS 1-2004e1” and any updates thereto.
- Outlet tees must be equipped with an effluent screen that is approved by the Department as an alternative technology.
- The inlet and outlet tees must have a minimum 20-inch diameter access opening. The access opening over the outlet tee must be brought to finished grade, while the inlet must either be at grade or within 12 inches of the finished grade. All risers must be watertight.
- Lids at grade must fit tightly and be a minimum of 59 pounds or be tamper resistant and mechanically fastened. In order to provide for public safety, septic tanks (as well as grease tanks, pump tanks and holding tanks) in place as of the effective date of these Rules that have access openings to finished grade must meet this requirement within 5 years.
- Septic tanks and their risers must be certified watertight by the manufacturer or by on-site testing. Tanks assembled on-site must be tested for leakage on-site (vacuum test or water pressure test).
- Whenever more than 25% of the daily design flow is pumped into a septic tank, the tank capacity must be increased by 50%. A 100 gallon or greater bath tub or a garbage grinder will each require the tank capacity to be increased by 250 gallons.

## **Rule 28 Holding Tanks**

- Holding tanks are prohibited for new construction and alteration applications. They may be allowed to repair or replace a failed system. Holding tanks are allowed at marine pumpout facilities.
- Standards for holding tank construction and installation are provided.

## **Rule 32 Leachfields – General**

- Other than approved Alternative or Experimental Technologies, leachfields must be either dispersal trenches or shallow concrete chambers (“flow diffusers”) in a trench configuration.
- Loading rates have been established for each soil category (soil category is assigned to each soil horizon). The leachfield loading rate will be the lowest loading rate encountered in accordance with the following:
  - If the bottom of the leachfield stone is above the original grade, use the soil horizon with the lowest loading rate within 5 feet of the original ground surface (current regulations specify 3 feet), excluding the A horizons (will be removed);
  - If the bottom of the leachfield stone is below the original grade, use the soil horizon within 5 feet below the elevation of the distribution pipe invert, including the soil horizons receiving side wall effluent;

- If no natural soil will remain within the 5 feet in the two cases above because of gravel fill, use the loading rate of the first naturally occurring soil horizon.
- The leachfield must be located in an area where the seasonal high groundwater table is a minimum of 2 feet below the original ground surface, unless the following is met: On lots 20,000 square feet or larger, the leachfield may be located in an area where the seasonal high groundwater table is less than 24 inches but greater than or equal to 18 inches from the original ground surface if the OWTS utilizes a bottomless sand filter and there are no requests for variances.
- Stone used in the leachfield must be a minimum of  $\frac{3}{4}$  inch.
- Detailed gravel specifications are provided.
- Maximum cover over the invert of the distribution lines has been reduced from 3.5 feet to 2.5 feet.
- A minimum 10 foot horizontal separation distance is required between the outer dispersal trench and any adjacent side slope, as measured from the outer edge of the stone in the trench at the elevation of the invert of the distribution line. This side slope must not be steeper than 3:1 (horizontal:vertical).
- A minimum of 25 feet shall be maintained from the outer edge of the dispersal trench and a structural retaining wall. Greater setback distances may be required for an OWTS with a design flow of 1000 gallons or more per day. Smaller setback distances may be permitted if the wall is constructed above the seasonal high groundwater table. The wall must be a minimum of 2 feet from the property line.

### **Rule 33 Dispersal Trenches**

- Maximum depth of stone allowed in the trench has been reduced from 3.5 feet to 1.5 feet.
- The maximum length of the distribution lines without dosing has been reduced from 75 feet to 50 feet; with a tipping distribution box 75 feet; and 100 feet with a pump.
- Where the invert of the distribution lines is below the original grade, only the trenches shall be excavated. Excavation of the entire area of the leachfield may only be done when trench excavation is shown to be impractical, for example due to the presence of excessive boulders or stumps. A 6-inch gravel base layer will be required below the stone in most cases.
- Where the invert of the distribution lines is above the original grade:
  - The A soil horizon (topsoil) must be removed over the entire area of the leachfield and 5 feet beyond the leachfield. In order to avoid compaction of the remaining B soil horizon, only tracked vehicles will be allowed in this area;
  - Trenches will be excavated out of gravel properly placed within the entire area of the leachfield. A 6 inch gravel base layer is required below the stone;
  - The maximum depth of stone below the distribution pipe shall be 0.5 feet; and
  - The minimum distance between walls of adjacent dispersal trenches shall be 10 feet.
- Where the dispersal trenches are to be constructed on a sloping site and the invert of the distribution lines will not all be at the same elevation:
  - The invert of the distribution lines must be below original grade;
  - The distribution lines must be laid level;
  - Serial distribution will not be allowed. The distribution box must provide equal dosing to each trench;
  - Must use a tipping distribution box or pump;
  - The ends of the distribution lines must be connected by an unperforated relief line;
  - A 6 inch gravel base layer is required below the stone; and

- The minimum distance between walls of adjacent dispersal trenches shall be 10 feet.

### **Rule 34 Concrete Chambers**

- The use of deep concrete chambers (“galleys”) will be prohibited for new building construction or alterations. Galleys will only be allowed on repairs if the designer demonstrates that no alternative type of leachfield can be utilized.
- Shallow concrete leaching chambers (also called “flow diffusers”) will be prohibited where any of the following occur:
  - Seasonal high groundwater table is less than 4 feet from the original ground surface;
  - The chamber invert would be more than one foot above the original grade; or
  - The chamber inverts would be set at different elevations.
- Stone below the chamber must extend 12 inches beyond the bottom area of the chamber and must be 12 inches deep below the chamber. The effective leaching area for shallow concrete chambers shall be 78 square feet per end unit and 64 square feet for each interior unit.
- As with dispersal trenches, the soil between the rows of chambers shall remain undisturbed, unless trench excavation is shown to be impractical. A 6 inch gravel base layer is required below the stone.
- Access openings brought to finished grade must have lids that fit tightly and be a minimum of 59 pounds or be tamper resistant and mechanically fastened. Existing chambers, including galley that are in place as of the effective date of these Rules that have access openings to finished grade must be in compliance with the above within 5 years.

### **Rule 35 Large Systems**

- The DEM “Rules and Regulations for Groundwater Quality” requirement for a groundwater quality certification for systems exceeding 5,000 gpd is superseded by the new OWTS Rules.
- Large systems are defined statewide as:
  - Any single OWTS with a design flow of 5,000 gpd or greater;
  - Multiple OWTSs for any project on one or more parcels of land, excluding residential subdivisions, where the total design flow for the project is 5,000 gpd or greater; or
  - Multiple OWTSs serving more than one unit in a residential subdivision, provided that the total design flow of these OWTSs, each serving more than one unit, is 5,000 gpd or more.
- Applicants for large systems where the groundwater is classified GAA or GA in accordance with the “Rules and Regulations for Groundwater Quality” are required to conduct an analysis of the impacts of the system on groundwater and surface water. Such analysis will include modeling of nitrate concentrations in groundwater.

### **Rule 36 Alternative Toilets**

- Alternative toilets are defined to include both composting and incinerating toilets.
- Standards have been established (NSF-ANSI Standard 41 “Non-Liquid Saturated Treatment Systems”) for the design, installation, and maintenance of composting toilets. Incinerating toilets must convert toilet contents to an inert, stable, or otherwise harmless condition.

- Graywater systems shall be designed to accommodate 60% of the design flow when alternative toilets are used. If wastewater from any conventional toilets are directed to this leachfield, it must be designed for 100% of the daily design flow.

### **Rule 39 Requirements in the Salt Pond and Narrow River Critical Resource Areas**

- Nitrogen reducing technologies will be required for OWTS Applications for New Building Construction, OWTS Applications for Repairs for leachfields (including cesspool upgrades), and for Applications for Alteration to an Existing Structure within the Salt Pond and Narrow River Special Area Management Plan areas as designated by CRMC.
- The vertical separation distance between the bottom of the stone and the seasonal high groundwater table in these critical resource areas shall be 4 feet whenever the coarser soil categories are encountered in determining the leachfield loading rate.

### **Rule 40 Requirements in Drinking Water Supply Watersheds**

- All drinking water reservoirs and their watersheds are designated as critical resource areas.
- In these watersheds, subdrains to lower the seasonal high groundwater table are not permitted, and the depth to the seasonal high groundwater table must be 4 feet from the bottom of the leachfield stone, whenever the coarser soil categories are encountered in determining the leachfield loading rate.

### **Rule 41 Nitrogen Loading in Areas of Onsite Wells**

- On lots with an onsite drinking water well, the design flow for an OWTS will not be allowed to exceed 345 gpd (3 bedrooms) per 20,000 square feet, unless nitrogen reducing technologies are utilized or the applicant establishes “nitrogen credit land” from adjacent property owners. Deed restrictions or conservation easements are placed on the nitrogen credit land to prohibit sources of nitrogen and reduce impervious surfaces.

### **Rules 47 and 48 Variance Reviews**

- Requests for variance will not be required for Applications for Alteration to an Existing Structure where there will be no increase in wastewater flow and for Applications for Repair.
- Variance requests must be submitted by Class II or Class III licensed designer.
- Variance requests as part of an Application for Alteration to an Existing Structure are exempt from the notification requirements.
- The Director may waive the notification requirements if the requested variance is from a horizontal setback distance from a feature on the applicant’s own property.
- The applicant must prove by means of a comprehensive analysis providing scientific and technical evidence that the design will mitigate impacts on public health and the environment.
- Other elements of the applicant’s system design (in which no variance is requested) may result in greater protection of the public health and the environment than is required by meeting the minimum standards of these Rules. In such case, the applicant may include how these elements of the system provide compensatory mitigation for the variance(s) requested as part of the comprehensive analysis.

- For redesign applications, any variance request previously approved by DEM will remain valid, provided that the circumstances regarding the variance have not changed.
- Requests for variances will not be approved for the following:
  - When the variance request is for an action prohibited in Rule 8;
  - When the variance request is for treating and dispersing wastewater on a different lot from the source structure in the Salt Pond and Narrow River SAMP areas, except for new subdivisions and repairs;
  - When the variance request resulted from the applicant subdividing his property after December 31, 1995, unless the applicant shows the reason for the request was not created by the actions of the applicant or prior owners of the property;
  - When the variance request is from the requirement that soil and seasonal high groundwater table data must have been determined within the last 5 years;
  - When there is a sanitary sewer reasonably accessible to the structure to be served by the OWTS;
  - When the variance request is for new lots under 10,000 square feet platted or otherwise created after June 18, 1992, unless the applicant shows the reason for the request was not created by the actions of the applicant or prior owners of the property;
  - When the variance request is for less than the 80 foot minimum setback from a private well in Rule 22;
  - When the variance request is for setbacks to public wells in Rule 22. Such request may be approved if the RI Dept. of Health has approved of the requested activity;
  - When the variance request is for a depth to groundwater from the original ground surface less than 12 inches;
  - When the variance request is for the denitrification requirements in the south shore salt pond and the Narrow River critical resource areas (Rule 39); or
  - When the variance request is from the nitrogen loading requirements in areas of onsite drinking water wells (Rule 41).

## **Rule 50 Fees**

- Certain fees have been raised to better reflect the Department's efforts involved, including: soil evaluation fee raised from \$100 to \$150; application fee involving alternative or experimental technologies is 2 times the fee for a standard system.

## **Rule 52 Removal and Abandonment**

- Septic tanks, grease tanks, pump chambers, holding tanks, concrete chambers and cesspools that are no longer in use must be properly abandoned to eliminate the danger of the structure collapsing in the future. The structures must be emptied of all wastes and then either removed, filled with clean sand or crushed and the area backfilled with clean soil.
- Any OWTS components that are excavated and removed off-site must be properly disposed of at a licensed solid waste landfill.

## **Effective Date**

- In order to provide the concrete precast industry with adequate time to diminish their existing inventory and prepare new casts, the provisions of the regulations for new or revised standards for construction of grease tanks, septic tanks, holding tanks, and pump tanks will take effect on January 1, 2009, one year after the effective date of the rest of the revised Rules.